STRATEGY RESEARCH PROJECT

WHERE NOW NATIONAL MISSILE DEFENSE?

BY

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ABSTRACT

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The United States does not have a National Missile Defense (NMD) system capable of protecting it from attack by Intercontinental Ballistic Missiles. Given the nature of the terrorist activities on 11 September 2001, is there less of a need for National Missile Defense, or is the need even stronger? This paper will look at National Missile Defense in the context of the program's history, today's new strategic environment, and the threat. It will assess the need for a defensive system and outline options for moving forward. It concludes with a recommended course of action.

TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

LIST OF TABLES

WHERE NOW NATIONAL MISSILE DEFENSE?

> We have seen the depth of our enemies' hatred...Time and distance from the events of September the 11th will not make us safer unless we act on its lessons...the price of indifference would be catastrophic.
>
> — State of the Union Address, President George W. Bush, January 29, 2002

Late in World War II, the Germans unleashed the world's first ballistic missile, the Vergeltungswaffe zwei, or V-2.[1] It achieved Hitler's goal as a terror weapon, put European Homelands like England and Belgium at risk, and killed over 7000 people in Europe.[2] Although antiaircraft artillerymen had been able to shoot down a majority of the slower, air breathing and unmanned V-1 "buzz bombs" that Germany had previously used against London, they proved unable to stop the Vengeance Weapon 2 (V-2) ballistic missile.[3] During the ensuing 60 years since that first application of ballistic missile weaponry, the technology improved significantly, the payloads became more deadly, and ownership proliferated worldwide.

With this dawn of new, longer-range ballistic missiles, capable of carrying very destructive payloads, came the quest to defend against them. Over the decades, the United States, her allies and enemies have sought to develop and field defensive systems to protect against ballistic missile weapons as well as produce advanced offensive systems to penetrate potential defenses. And eventually, a strategic framework evolved in what would become known as a Mutually Assured Destruction strategy. This strategy was based on the theory that neither the United States nor her enemies would ever start a nuclear war because the other side would respond with a massive retaliatory strike with unacceptable consequences.[4] The strategy was further solidified through the implementation of the "Treaty between the United States of America and the Union of Soviet Socialist Republics on the Limitation of Anti-Ballistic Missile Systems", or as it has become known, the ABM Treaty of 1972. This Treaty outlined the restrictions on the signatories' defensive systems, ensuring that each country would be vulnerable to the other's strategic nuclear attack.[5]

At 8:45 a.m. on September 11, 2001, New York City and the rest of the United States found itself in a similar situation of vulnerability to that of London and the rest of England on September 8, 1944.[6] But unlike London, the terror in New York City did not arrive via ballistic missiles. It arrived via hijacked airliners. Still, the death, devastation and horror delivered by the hijacker terrorists is perhaps not unlike, and arguably even far less damaging than that which might some day be delivered by an enemy's ballistic missiles, against which the United States is currently defenseless. Although there had been much technical and academic debate

regarding the future of a National Missile Defense system prior to September 11, 2001, this horrific event should serve as a wake-up call for the nation and its leadership. Assuming that we have learned something in the last 57 years, now is the time to seriously consider, "Where now National Missile Defense?"

This paper will recommend a path forward for National Missile Defense (NMD). The recommendation will be based on an examination of our technology advances in the area of ballistic missile defense, the threat and risks associated with a ballistic missile attack on the United States, and options for defending against such an attack. It will do so within the context of the changes to the global security environment and United States mindset that have occurred since the attacks on September 11, 2001.

FROM WORLD WAR II TO 11 SEPTEMBER 2001

Before looking at where NMD should be heading, it is useful to take a brief look at those years since the V-2 attacks of World War II to see where we have been and how our technology has advanced.

Soon after the Allies, and in particular Russia and the United States, began to move apart after World War II, they began focusing on developing long-range intercontinental ballistic missiles capable of carrying nuclear warheads. However, strategic defenses were more focused on defeating aircraft instead of missiles primarily because anti-missile technology was not yet ready and because long-range ballistic missiles had not yet been fielded.[7] In the late 1950's, the United States increased its anti-ballistic missile defense developmental efforts. Nike-Zeus was one of the first programs, with its 400-kiloton nuclear warhead designed to detonate in the exoatmosphere and destroy incoming missiles.[8] Then, in the early 1960's, Nike-X replaced Nike-Zeus. It incorporated advanced radar with short-range and long-range, nuclear-tipped missile interceptors, Sprint and Spartan respectively.[9] Sentinel replaced Nike-X and in 1969, Congress approved the initial deployment of a modified Sentinel system, named Safeguard.[10] With the ABM Treaty of 1972, and a 1974 Protocol reducing the number of allowable ABM sites to one, the United States decided to defend the Minuteman missile sites around Grand Forks, North Dakota and the Russians built their Galosh system around Moscow.[11] In 1976, after only four months of operation, Congress voted to close the Safeguard site because they realized the Soviet's multiple independent reentry vehicles could overwhelm the system, and the electro-magnetic pulse from Safeguard's nuclear-tipped interceptors would also blind the system's radars.[12] The Soviet Galosh system has been upgraded to the Gazelle system and is still in place today.[13]

The United States ABM effort reemerged under President Reagan's Strategic Defense Initiative in 1983 when he proposed a robust, space-based system that could defend 3,500 targets against Soviet missiles.[14] When the Soviet Union collapsed, President Bush refocused the effort in 1992 to a Global Protection Against Limited Strikes designed to defend against up to 200 nuclear warheads.[15] Then, under President Clinton, the Strategic Defense Initiative Organization became the Ballistic Missile Defense Organization and development was underway for a limited system, capable of defeating a handful of simple warheads, potentially as early as 2003.[16] In January of l999, this so-called "three plus three program" was adjusted by the Clinton Administration to provide for deployment of an effective, limited missile defense against nations of concern as early as 2005.

The United States policy for NMD has further evolved over the last few years because of updated intelligence estimates of the threat, advances in technology and the transition to a new Administration. The National Missile Defense Act of 1999 stated that "it is the policy of the United States to deploy as soon as is technologically possible an effective National Missile Defense system capable of defending the territory of the United States against limited ballistic missile attack (whether accidental, unauthorized, or deliberate)...".[17] As outlined in the 2000 National Security Strategy, the Clinton Administration committed to the development of this system and defined it as a single ground-based interceptor site with 100 interceptors and an anti-ballistic missile (ABM) radar in Alaska plus five, upgraded early warning radars.[18] However, in September 2000, President Clinton decided not to begin actions necessary to deploy this system during his administration because it had not yet been technically proven. He directed the Secretary of Defense to continue with development and testing and deferred a further deployment decision to the next Administration.[19]

In a May 2001 address to the National Defense University (NDU), President Bush committed to deploying missile defenses, when ready, "to strengthen global security and stability".[20] However, unlike the NMD system of the Clinton Administration, President Bush did not define the specific architecture. Instead, he emphasized options for a more layered defense including systems that would intercept missiles in the boost phase as well as the mid-course and terminal phases of flight.[21] The other critical difference between the Bush and Clinton policies is their differing views toward the ABM Treaty of 1972. President Clinton called the Treaty the "cornerstone of strategic stability"[22], while President Bush said that the treaty ". . . does not recognize the present, or point us to the future. It enshrines the past."[23]

The Department of Defense's latest intent for NMD is described in the September 2001 Quadrennial Defense Review (QDR). Similar to President Bush's statement to the NDU, the

QDR clarifies that NMD has been "refocused and revitalized", shifting from a single-site "national" missile defense approach to broad-based research, development, and testing leading to deployment of a layered missile defense system.[24] A unique aspect of the Bush formulation on missile defenses was to include all missile defenses including theater, national, and allied under a new rubric of "the missile defense system". It now is an integrated system to protect forward-deployed forces, and provide a limited defense against missile threats for the American people, United States friends and allies.[25] This is essentially a blurring from the previous differentiation between theater and national missile defenses.

POST 11 SEPTEMBER 2001

Regardless of how much political or academic debate about NMD took place prior to 11 September 2001, the strategic situation changed at 8:45 a.m. that day. That was the day when many who thought certain things couldn't or wouldn't happen found out that they could and would. A nation awoke with eyes wide open to new threats to our country and to the realization that many of our strategic policies including those related to missile defense were still mired in the Cold War.

THE THREAT

The events of September 11th raised many legitimate questions about the ballistic missile threat to the United States? Should we worry about ballistic missiles because terrorists will use airplanes instead? Should we forget about NMD and spend the money on airport security and customs screening instead? Are we wrong to worry about State actors and should we now focus on radical fundamentalists? While each of these questions is academically debatable, this author proposes that the 11th of September proved two important things about the threat. First, the United States Homeland and its citizens are vulnerable to devastating attacks from a determined foe with global reach, and second, if the determined foe has the means to act, he will.

United States Vulnerability

There is a vast array of threats to the United States. We have seen what hijacked, fuel-laden airliners can do to a city's skyline. Biological and chemical agents could be introduced into public transportation systems, food or water sources. Radioactive waste or even crude, small-yield nuclear devices could be delivered by ship, rail or truck to many attractive target areas. By all means, the United States should take prudent security steps to mitigate the possibility of all such events. But there is a significant difference between those threats and the

launching of a ballistic missile carrying a weapon of mass destruction against the United States. We can do something to counter the other events. Especially if we have intelligence, we could theoretically track, intercept and destroy any of the above threats before their lethal effects are delivered. But even if we have intelligence that a ballistic missile launch has occurred, we are helpless against it once the missile is in flight. The risk associated with a nuclear ballistic missile attack can be categorized in the traditional risk model of probability and outcome.[26] Many used to think the probability of nuclear ballistic missile attack against the United States was nearly zero. After 11 September, one can assert that the probability is still relatively low, but it has moved up the scale from "remote" to either "unlikely" or "likely". The critical piece of the risk model is the outcome. A nuclear missile impacting in a large United States city would have a catastrophic outcome. An unclassified source describes a "small" nuclear attack in a major urban center producing 180,000 nuclear weapon deaths as a very "optimistic" projection with the number of deaths usually being far greater.[27] Add to this the billions of dollars of damage and the likelihood that a significant portion of a major urban area would be uninhabitable for years and you clearly have an unacceptable catastrophe. These low probability, but high consequence situations result in moderate or high-risk situations. These risks are clearly are clearly the types of things for which we purchase insurance in our private lives. Fire, flood, automobile and homeowners insurance all protect the owner from the possibility that he will sustain unbearable loss. Yet, our nation has no insurance from ballistic missile attack. This concept from our daily lives can be related to the problem of national missile defense graphically. Figure 1 portrays the standard risk management fundamentals from the Risk Management Guide for DoD Acquisition.[28] This is the risk management construct that Department of Defense weapons systems managers use to identify risks in large Defense Acquisition programs. The graphic in Figure 1 shows how risks are generally categorized if we assume that "probability" and "consequence" are weighted equally. The chart shows us that if the probability of an attack is "remote" or "unlikely", and if the consequence of an attack is "unacceptable", then risk is "moderate". Moderate risk means that the approach may be unacceptable and additional management attention is required.[29] If we assume the probability of attack is "likely", then the risk moves up to "high".

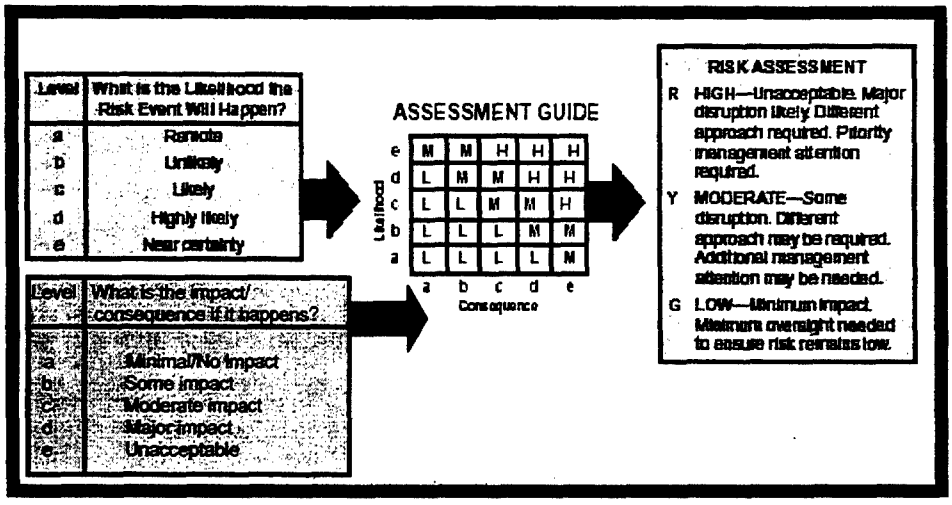

FIGURE 1 - STANDARD RISK MATRIX

However, the Risk Management Guide also notes that probability and consequence should not always be equally weighted. In situations where the consequence is severe, the risk should be rated "high" even though the probability of occurrence is "low".[30] It is certainly arguable that the consequences of a nuclear missile attack place such attacks in the high-risk category. Figure 2 reflects this modified weighting approach. Now even though the probability of a ballistic missile attack may be "remote" or "unlikely", the situation is still "high risk" because of the severity of the consequences. High-risk events require alternate approaches and immediate leadership attention.[31]

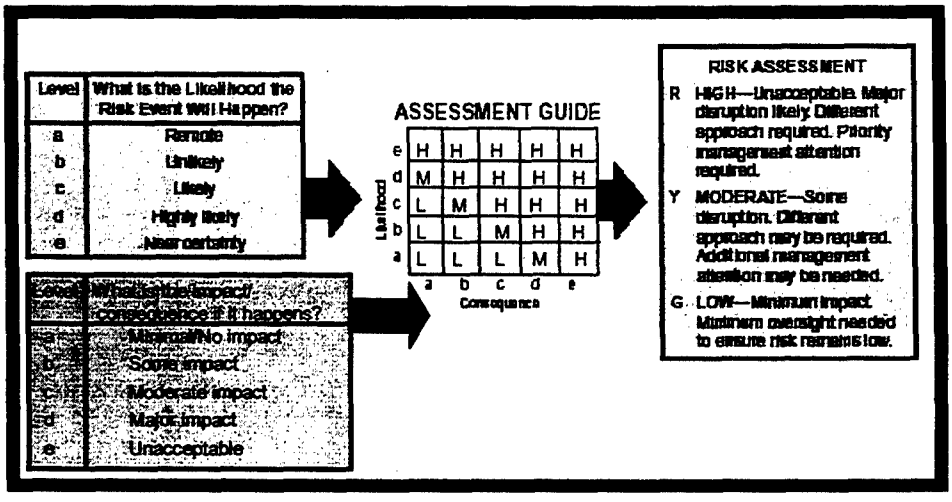

FIGURE 2 - MODIFIED RISK MATRIX

A Determined Foe

The terrorist attack on 11 September demonstrates to the world that if a foe has the will and the way, he will attack. Would Usama Bin Laden have used ballistic missiles instead of hijacked airliners if he had them? It is quite likely. Bin Laden and Al Qaeda's longstanding interest in acquiring a nuclear capability is well known. For example, in February 2001, a Sudanese man who worked for bin Laden for nine years, Jamal Ahmed Fadl, testified that al Qaeda was trying to acquire nuclear material in the early 1990s.[32] Fadl said that a bin Laden lieutenant ordered him to buy uranium from a former Sudanese army officer, who offered to sell ore from South Africa for $1.5 million.[33] In an interview with a Pakistani journalist, bin Laden was quoted as saying, "I wish to declare that if America used chemical or nuclear weapons against us, then we may retort with chemical and nuclear weapons."[34] In addition, Taliban Ambassador to Pakistan, Abdul Salam Zaeef, announced that, "If we had possessed [nuclear weapons], we would not have waited to use them."[35]

Likewise, we can turn to evidence of other rogue actors to lead us to a conclusion on their willingness to employ such weapons. In 1995, Chinese General Xiong Guangkai warned a United States official that China could use military force against Taiwan without fear of United States intervention because American leaders "care more about Los Angeles than they do about Taiwan."[36] A follow-on editorial in a Chinese newspaper in March 2000 added that, "The United States will not sacrifice 200 million Americans for 20 million Taiwanese."[37] This again shows awareness by potential United States adversaries of the possibility of using nuclear ballistic missiles against the United States.

The December 2001 unclassified summary of the National Intelligence Estimate of the Foreign Missile Developments and the Ballistic Missile Threat Through 2015 states that before 2015 the United States most likely will face ICBM threats from North Korea and Iran, and possibly from Iraq, plus the existing forces of Russia and China.[38] Although the estimate states that the United States is more likely to be attacked with Weapons of Mass Destruction using non-missile means, it notes that these means do not provide the same degree of prestige or deterrence and coercive diplomacy as is associated with ICBMs.[39] This shows how it is prudent for the United States to attack this threat from both a non-missile and a missile delivered perspective.

OBSOLETE STRATEGIC POLICIES

> I have concluded the ABM treaty hinders our government's ability to develop ways to protect our people from future terrorist or rogue state missile attacks.
>
> — President George W. Bush

Strategic policies and strategies focused on traditional, Cold War enemies should not undermine the right of the United States to self-defense. The most obvious of these is the strategy of Mutual Assured Destruction and its enabling ABM Treaty of 1972.

ABM Treaty of 1972

The United States entered into the ABM Treaty with the Soviet Union in 1972. The driving tenet of the Treaty was to ensure that neither party developed a defensive system capable of defending the territory of its country or precluding the other from penetrating it with his offensive strategic arsenal. The ABM Treaty and its subsequent protocols, limited each country to only one ABM site to protect either its national capital or its ICBM fields. It further limited, to 100, the number of interceptor missiles that could be deployed at the site.[40]

President Bush's Perspective

While it was the intent of the Clinton Administration to adhere as closely as possible to the 1972 ABM Treaty, President Bush's objective is to "leave behind the constraints of an ABM Treaty that perpetuates a relationship based on distrust and mutual vulnerability."[41] President Bush believes the treaty "ignores the fundamental breakthroughs in technology during the last 30 years" and "prohibits us from exploring all options for defending against the threats that face us, our allies and other countries."[42] On 13 December, 2001, the Bush administration formally notified Russia and three former Soviet republics that it would be invoking its right under the provisions of Article 15 of the ABM Treaty[43]. The Administration was providing them notice of the intent to withdraw from the pact in six months per the provisions of that article.[44] President Bush has stated that he plans to replace the treaty with a new framework that moves beyond the Cold War mentality and builds on "a new cooperative relationship (that looks) to the future, not the past."[45] The President and some members of Congress are also applying diplomatic skills and information operations to move forward. In a 21 January 2002 opinion piece in the Moscow Times, Representative Curt Weldon (R-PA) told the Russian people that "After half a century of Mutual Assured Destruction, the time has come to pool our technological resources for the purpose of creating Mutually Assured Protection."[46]

Of course, there is risk in a U.S. deployment of missile defenses, which can defend U.S. territory. Several allies are concerned that segments of the system, such as early warning radar, that are stationed on their territory would become nuclear targets for the Russians or Chinese.[47] In June 2000, Russian President Putin also said that an American withdrawal from the ABM treaty could cause Moscow to "abandon its commitments...under the treaty on elimination of intermediate-range and shorter range nuclear missiles."[48] This would again put European territory within the range-fan of a renewed Russian nuclear arsenal. After President Bush announced his intent to withdraw from the ABM Treaty, President Putin called it "a mistake". Likewise, Chinese leaders state that "United States missile defense would upset the world's strategic balance" and breaking the ABM treaty would "shatter the basis of nuclear non-proliferation."[49] However, there are also indications that strategic stability is possible. A recent State Department survey shows that 85 percent of citizens of Kazakhstan, a would be successor to the ABM Treaty under the 1997 New York agreements negotiated by the Clinton Administration, favor the creation of a new anti-missile shield over the United States, and only 23 percent consider such a system to be another United States attempt to establish its world domination.[50] And, now that United States has announced plans to withdraw from the Treaty, the Russians appear to be taking a less confrontational stance. Russian Deputy Defense Minister, Alexei Moskovsky, said in January that Russia is not planning any "symmetrical or asymmetrical responses" and they "still have two-three years to calmly assess and analyze the arising situation and make some decisions."[51]

THE RESPONSE TO 11 SEPTEMBER

The United States found itself on 11 September, and still today, vulnerable to attack from a determined foe. Had the Central Intelligence Agency, Federal Bureau of Investigation, or even airport security communities been able to identify the threat and provide warning, perhaps most of the devastation and death could have been avoided. And even if early lines of defense fail, we still have the technical capability in the field today to intercept and down an airliner if deemed necessary and if time allows. But the same is not necessarily true of an ICBM attack. In that case, once the missile has launched, there is no more Americans can do today than the British could do in 1944 against the V-2. So, we are defenseless. State and non-state actors have articulated or threatened their willingness to use ICBMs against the United States if they gain possession and given the opportunity. Finally, we have seen that the ABM Treaty does nothing to assure stability with this type of rogue actor, and instead guarantees we remain defenseless. So, where do we go from here? What is the appropriate way ahead for NMD now

that 11 September is part of American history? This paper offers three alternatives. Each represents a potential opportunity to move ahead and to provide a more secure Homeland. We will then look at each alternative in terms of their relative risk, effectiveness and cost.

THE BUSH ADMINISTRATION'S PLAN

Let's first examine the current Administration's plan. The objective of the program is to "develop the capability to defend the forces and territories of the United States, its Allies, and friends against all classes of ballistic missile threats."[52] Though a specific architecture is not outlined, the newly named Missile Defense Agency, formerly the Ballistic Missile Defense Organization, simply calls this expansive system "the Ballistic Missile Defense System" and no longer separates it into TMD and NMD.[53] Instead, it describes a research, development and test program to develop a layered defense over time that employs complementary sensors and weapons to engage threat systems in their boost, midcourse, and terminal phases of flight.[54] These phases are depicted simplistically in Figure 3.[55] This system would need to be integrated through a vast battle management, command and control system.

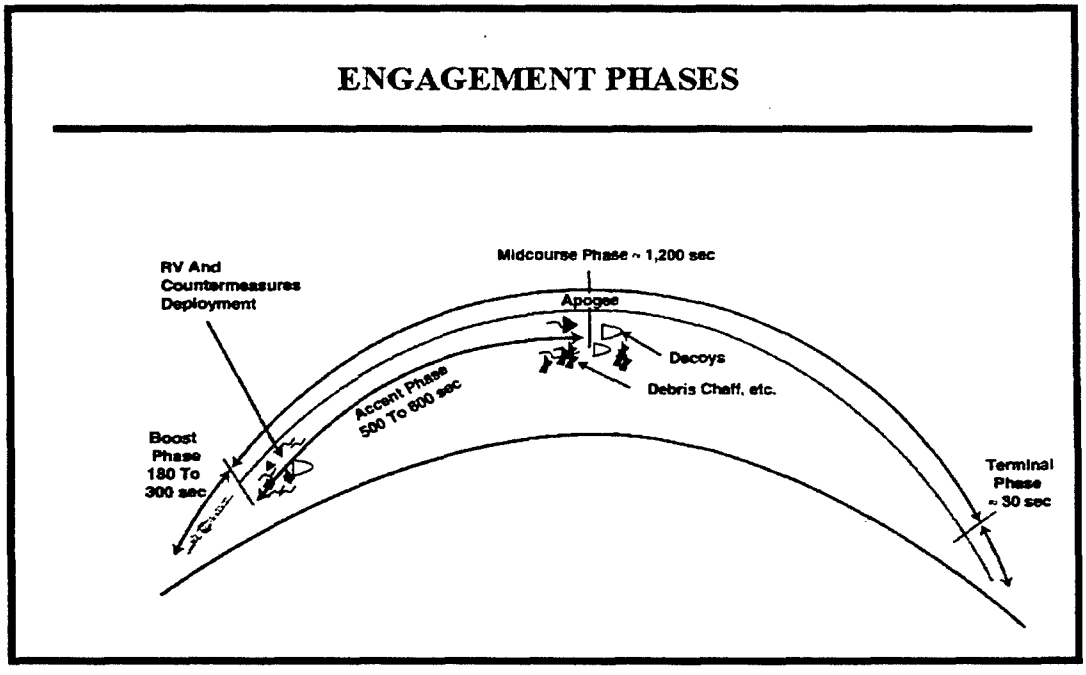

FIGURE 3 - BASIC ENGAGEMENT PHASES

Because the United States announced its intention to withdraw from the ABM Treaty, the system now has the potential to be even more robust than envisioned under the Clinton Administration. The Missile Defense Agency now intends to pursue a broad range of activities

to further evaluate and develop technologies for the integration of land, sea, air or space-based platforms to counter missiles in all phases.[56]

The major risk in deploying the capabilities espoused in the Bush Administration's plan is time. Can and will such a system be deployed before it is needed? This is both a technical question and a threat question. Latest Pentagon tests indicate the program is making progress integrating earlier planned technologies. The Pentagon's FY03 budget request includes $7.8 billion for ballistic missile defense programs and is intended to build a missile defense testbed in Alaska by the end of 2005.[57] Though the program does not commit to a timeline of deploying a missile defense "system", one can infer that a basic capability to defeat a few, simple warheads could be available shortly thereafter. However, this system could not address all threats and would be optimized to address the most immediate threat - North Korea.[58] Unfortunately, the current Bush NMD system architecture is undefined and rather focuses on intensive research and testing. This lack of definition is an indication that the ability to deploy a system in the near-term may be questionable. The threat is the other risk variable.

The 1999 National Intelligence Council's Report Foreign Missile Developments and the Ballistic Missile Threat to the United States Through 2015 states that the United States will *most likely* face ICBM threats from Russia, China, and North Korea, *probably* from Iran and *possibly* from Iraq.[59] The report further indicates that the threat from Russia and China exists now, the North Korean threat could exist at any time, the Iranian threat ranges from 2010 to 2015, and the Iraqi threat ranges from possibly before 2010 to likely before 2015.[60] Therefore, the risk window is open until the United States deploys a defensive system. The American people are now more sensitive to this risk, and to the potential failings of the intelligence community, given the events of 11 September.

Advantages

The Bush Administration system has the potential to be very robust given the Administration's emphasis on boost, mid-course and terminal phases as well as on land, sea, air and space basing. Given that the expected withdrawal from the treaty occurs, there will likely be no external restrictions on what elements can be added to make the system the most effective possible. This system would have the best probability of defeating a wide array of threat systems.

Disadvantages

The most significant drawbacks to the Bush plan may be time, money and the risk to the global strategic balance. Because the plan is not focused and so many elements and services

are being included, the research, development and test period is likely to be protracted. Likewise, significant fiscal resources will need to be committed to sufficiently mature each of the elements and deploy them when they are ready. A recent Congressional Budget Office (CBO) estimate outlines that the land-based midcourse system could range from $25-$64 billion depending upon whether one, two or three sites are deployed, and a sea-based midcourse system could cost from $43 to 55 billion.[61] For boost-phase intercept, the Space-Based Laser would cost $56-68 billion.[62] The CBO did not estimate the cost of a Sea-Based boost-phase intercept system. Because research, development and some elements of each of these systems is common, they can not be added together to get a total cost of the Bush program. However, the costs are useful for comparison purposes. The deployment of all types of missile defense forces advocated by the administration could not be near-term given the need to mature, analyze and select from so many elements. Finally, the Administration's intent to withdraw from the ABM Treaty could cause increased risk to the global strategic balance because Russia and China may perceive our deployment of an NMD system as tipping the balance in favor of the United States. Deployment of the NMD system could drive Russia and China to increase and modernize their strategic arsenals and proliferate ballistic missile technology to third parties.

THE LINDSAY/O'HANLON PLAN

James M. Lindsay and Michael E. O'Hanlon of the Brookings Institute in their book, Defending America: The Case for Limited National Missile Defense, offer an alternative to the Bush plan. The objective of the Lindsay/O'Hanlon option is to provide a "modest-scale", two-tier missile defense emphasizing boost-phase technology, while devoting a portion of the NMD budget toward improving security and response capabilities against related dangers.[63] They advocate a system that meets the following three criteria.[64] First, it would in their view be achievable by the end of the decade. Second, according to Mr. Lindsay and Mr. O' Hanlon, their plan would be robust enough against the rogue threat, but not threaten the Russian or Chinese arsenals. And finally, it would protect our Allies so that the United States would not be vulnerable to blackmail threats against them. The system envisioned by these gentlemen is a boost phase and midcourse-phase system of 200 interceptors. Fifty interceptors would be based in North Dakota and the others would be spread amongst several boost-phase platforms in the air, on the sea and on foreign territory.[65] However, none of boost-phase systems would be located in a position, or with capability sufficient, to intercept launches from the heartland of China or Russia.[66] Mr. O'Hanlon and Mr. Lindsay realize the finite level of budget authority

available and thus propose the more modest system, allowing funds to be available so that the United States can "diversify its homeland defense investment portfolio".[67] Lindsay and O'Hanlon estimate the cost of their system at $35 billion.

Advantages

This system contains fewer elements than the Bush Administration's system. As such, it will cost less than Bush's plan, making additional scarce dollars available for other Homeland security measures. Lindsay and O'Hanlon estimate their system would cost $35 billion. Using the CBO estimate of the Bush program as a guide, we can see that $35 billion is more than the $25 billion CBO estimate for a single site, but less than the total cost of a single site and a boost-phase capability. Therefore, we can argue that the $35 billion figure is realistic, and acceptable for our relative comparison. The system is designed to provide good protection against threats from rogue nations, but is not as robust as the Bush program, and thus would be less capable of defeating attacks from Russia or China. Because of this, and the fact that Lindsay and O'Hanlon would expect their system to only require modifications instead of a total withdrawal from the ABM Treaty, Russia and China would be less likely to increase their nuclear arsenals in response.

Disadvantages

The focus of this system is on interception of enemy missiles in the boost phase of their flight. Although boost phase intercept can be a very effective method of defeating a missile before it has dispensed its reentry vehicles or penetration aids, it has significant risks and challenges associated with the timelines for response and for command and control. In general, a boost phase system would need to engage the threat within one to five minutes of launch.[68] According to the former Defense Acquisition Executive, Jacques Gansler, the timelines for boost phase intercept are so short that "humans cannot be in the loop".[69] He further noted that to be effective, the system would need space-based sensors and long-range radars to detect and track the missile launch, "perfect communications", and the ability to fire an interceptor "almost simultaneously" with the launch. [70] The Missile Defense Agency's general officer in charge of developing missile defense systems also confirmed the challenges of this system. In testimony to Congress, Lieutenant General Kadish explained that the response timelines for boost phase intercept are "obviously critical" and "there are some very important command and control issues associated with this system and its development."[71] Finally, one can rationalize that, given the number of interceptors and boost-phase platforms required, the cost for this alternative would be significant, although less than Bush's plan.

FOCUSED, NEAR-TERM PLAN

Although there are benefits to each of the previous options, there is perhaps a third and better alternative. The objective of this option would be to field a "simple" system as soon as possible, without generating a black hole for Department of Defense funding. This option would diverge from the Administration's plan of an extensive, long-term research and development program and focuses on fielding a mid-course, land-based system in the United States immediately to address the simple, rogue threats. To preserve funding for other Homeland defense measures, this option would fund only a low level of research and development to continue development of potential, future enhancements to the system. These future improvements could include additional sea, air or space-based elements and other block improvements for addressing threats of greater complexity. The system would be based wherever the Missile Defense Agency determines to be the most effective for coverage against the North Korean, Iranian and Iraqi threats, or those "states of concern" identified by the intelligence community for the near term. Because this option matures and deploys only a land-based, midcourse system, there are fewer elements than the other options and therefore one could conclude it to be less expensive.

Advantages

This option has two main advantages. First, it focuses resources and effort on a limited number of elements and therefore theoretically might put a system capable of defeating the projected, simple threats into the field soonest and possibly close our window of risk to the threat the fastest. Second, because it uses fewer architectural elements than the other options, it would likely prove cheaper and therefore saves more money to be applied to other Homeland security priorities. Using the CBO estimate for a single, land-based, mid-course system, we could estimate this system to cost about $25 billion.[72] An additional advantage would be that it would not disregard the ABM Treaty as blatantly as the Bush plan, nor would it beas robust, and therefore would be perceived as less threatening by Russia and China. This would lead to greater strategic stability.

Disadvantages

Because this option focuses on one solution now, it would only be capable of addressing simple threats from rogue adversaries. The low level of research and development might not enable a more robust system for quite some time.

ANALYSIS OF ALTERNATIVES

Table 1 depicts the advantages and disadvantages of the options discussed above in terms of specific effectiveness, cost and risk criteria. Effectiveness is depicted in terms of the relative ability of the system to address the threats identified by the National Intelligence Council as outlined previously. Cost is as a relative rating based on the complexity and number of elements in each of the options. Risk was addressed previously in terms of probability and consequence. Consistent with this approach in the following table, the risk of not deploying the system is depicted as high. The risk noted below is associated with the probability that a system will be developed, deployed and operational in time to defeat the threat. Each of the criteria has equal weighting because getting a defensive system deployed in time is just as important as having an effective system which is just as important as preserving funds for application to other complementary Homeland security measures.

	Criteria			
Plan	**Effectiveness**	**Cost**	**Risk**	**Total**
Administration's Plan	1	3	3	7
Linday/O'Hanlon's Plan	2	2	2	6
Focused Near-Term Plan	3	1	1	5

TABLE 1 - ANALYSIS OF ALTERNATIVES

Table 1 shows the relative scores of each of the options, using a 1 though 3 rating where 1 is the best and 3 is the worst. Under this scheme, the lowest score is the better option. In this case, the focused, near-term plan is rated as the best of the three options. It is the lowest cost and addresses the risk best by deploying a system the fastest. Even though the system is not as effective as the other systems, one can argue that it is still effective enough for the simple, rogue threat. This is the recommended approach.

CONCLUSION

Although New York City and the Pentagon were not attacked by ballistic missiles carting weapons of mass destruction on 11 September 2001, the event proved many things to the world. Foremost, it showed how vulnerable the population and infrastructure of the United States is to a determined foe's attack. It also showed that there are "rogue" players in the world who, given the means, will find a way to inflict as much damage as possible to innocent American civilians. Threat estimates, when taken in conjunction with statements and innuendo by potential adversaries, are sufficient to cause concern that the probability of a nuclear ballistic

missile attack is not as remote as we may have believed previously. The risk window is open now, and the United States has no insurance policy to protect itself from the unacceptable, catastrophic consequences that could result should the determined foe obtain the means to accomplish the task. The current Administration's plan is examining a broad array of potential technologies, but is not focused on the near-term deployment of a system. It may well consume years of research and development and billions of scarce dollars. Those are years with the Homeland still vulnerable, and the dollars are needed to cover other, critical Homeland security measures. Other options presented promise to deliver earlier and save money. However, the added cost and time incurred to field a boost phase system, coupled with the extremely short timeline for missile engagement opportunities under this approach, limit the return on investment of deploying it. The country needs protection now. The current land-based system has demonstrated sufficient success in intercept tests to show that the concept is technically feasible and is mature enough to move forward into an emergency deployment to defeat the simple, rogue threats. Focusing now on a limited, land-based, mid-course system should make deployment faster, cheaper, and more acceptable to the Russians and Chinese, and thus help preserve strategic stability. It has been 57 years since V-2's caused massive terror, death and devastation as they rained down on London. We have learned much in that time, but the events of 11 September have reminded us that we remain vulnerable to the global reach of adversaries. We must focus our resources and deploy a land-based, midcourse NMD system immediately because the potential exists that next time terror will hit the United States by ballistic missiles instead of commercial airliners.

WORD COUNT = 6136

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